a gate electrode formed adjacent to said channel region with a gate insulating layer therebetween;

wherein a boundary region between said channel region and at least one of said source and drain regions has a greater energy band gap than any of said source, drain and channel regions; and

wherein each of said source and drain regions includes therein a first region in contact with said channel semiconductor region and a second region distant from said channel semiconductor region, where a concentration of n-type or p-type impurity in said first region is lower than that in said second region to thereby impart a light doped drain (LDD) characteristic to said insulated gate field effect transistor.

22. An insulated gate field effect transistor comprising:

a channel semiconductor region;

source and drain semiconductor regions in contact with said channel semiconductor region with a source/channel boundary between the source and channel regions and a drain/channel boundary between the drain and channel regions; and

impurity doped regions formed between the source and channel regions and between the drain and channel regions, respectively, said impurity doped regions being doped with at least one of carbon, nitrogen and oxygen,

wherein said source/channel boundary and drain/channel boundary are located within said impurity doped regions, respectively.

23. An insulated gate field effect transistor comprising:

a channel semiconductor region;

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source and drain semiconductor regions in contact with said channel semiconductor region with a source/channel boundary between the source and channel regions and a drain/channel boundary between the drain and channel regions; and

impurity doped regions formed between the source and channel regions and between the drain and channel regions, respectively, said impurity doped regions being doped with at least one of carbon, nitrogen and oxygen,

wherein said impurity doped regions are located within said channel semiconductor region respectively adjacent said source/channel boundary and said drain/channel boundary.

24. An insulated gate field effect transistor comprising:

a semiconductor channel layer;

source and drain regions comprising an impurity doped semiconductor of one conductivity type, with said channel layer extending therebetween; and

a lightly doped drain (LDD) interposed between said channel layer and at least said drain region,

wherein said lightly doped drain is doped with an element selected from the group consisting of carbon, oxygen and nitrogen at least partly to thereby impart a foreign doped drain (FDD) characteristic to the transistor.

25. An electro-optical device including an insulated gate field effect semiconductor device for driving a pixel of the electro-optical device comprising:

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an electro-optical device including a plurality of pixels; and

insulated gate field effect devices for respectively driving said pixels, said insulated gate field effect devices each including;

a semiconductor layer including a channel region;

semiconductor source and drain regions provided in contact with said channel region at a source-channel boundary and a drain-channel boundary respectively;

a gate electrode over said channel region; and

a gate insulating layer interposed between said gate electrode and said channel region;

wherein said semiconductor layer is doped with one or more elements selected from the group consisting of carbon, nitrogen, and oxygen in at least one boundary region in the vicinity of at least one of said source-channel boundary and said drain-channel boundary at a concentration of at least $1x10^{19}$ atoms/cm^3.

26. The device of claim 25 wherein said boundary region is doped at a doping concentration higher than any doping concentration of the same one or more elements in the remainder of said channel region.

27. An electro-optical device including an insulated gate field effect semiconductor device for driving a pixel of the electro-optical device comprising:

an electro-optical device including a plurality of pixels; and

insulated gate field effect devices for respectively driving said pixels, said insulated gate field effect devices each including;

a semiconductor layer including a channel region;

semiconductor source and drain regions provided in contact with said channel region at a source-channel boundary and a drain-channel boundary respectively;

a gate electrode below said channel region; and

a gate insulating layer interposed between said gate electrode and said channel region;

wherein said semiconductor layer is doped with one or more elements selected from the group consisting of carbon, nitrogen, and oxygen in at least one boundary region in the vicinity of at least one of said source channel boundary and said drain-channel boundary at a concentration of at least 1×10^{19} atoms/cm^3.

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28. The device of claim 27 wherein said boundary region is doped at a doping concentration higher than any doping concentration of the same one or more elements in the remainder of said channel region.

29. An electro-optical device including an insulated gate field effect semiconductor device comprising:

an electro-optical device including a plurality of pixels; and

insulated gate field effect devices for respectively driving said pixels, said insulated gate field effect devices each including;

source and drain semiconductor regions and a channel semiconductor region in contact with said source and drain regions; and

a gate electrode over said channel region with a gate insulating layer therebetween;

wherein a boundary region between said channel region and at least one of said source and drain regions has a higher energy band gap than said source and drain regions.

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30. An electro-optical device including an insulated gate field effect semiconductor device comprising:

an electro-optical device including a plurality of pixels; and

insulated gate field effect devices for respectively driving said pixels, said insulated gate field effect devices each including;

source and drain semiconductor regions and a channel semiconductor region in contact with said source and drain regions; and

a gate electrode below said channel region with a gate insulating layer therebetween;

wherein a boundary region between said channel region and at least one of said source and drain regions has a higher energy band gap than said source and drain regions.

31. An electro-optical device including an insulated gate field effect semiconductor device for driving a pixel of the electro-optical device comprising:

an electro-optical device including a plurality of pixels; and

insulated gate field effect devices for respectively driving said pixels, said insulated gate field effect devices each including;

a semiconductor layer including a channel region;

semiconductor source and drain regions provided in contact with said channel region at a source-channel boundary and a drain-channel boundary

respectively;

a gate electrode provided adjacent to said channel region; and

a gate insulating layer interposed between said gate electrode and said channel region;

wherein said semiconductor layer is doped with nitrogen in at least one boundary region in the vicinity of at least one of said source-channel boundary and said drain-channel boundary at a concentration of at least 1×10^{19} atoms/cm^3.

32. An electro-optical device including an insulated gate field effect semiconductor device for driving a pixel of the electro-optical device comprising:

an electro-optical device including a plurality of pixels; and

insulated gate field effect devices for respectively driving said pixels, said insulated gate field effect devices each including;

a semiconductor layer including a channel region;

semiconductor source and drain regions provided in contact with said channel region at a source-channel boundary and a drain-channel boundary respectively;

a gate electrode provided adjacent to said channel region; and

a gate insulating layer interposed between said gate electrode and said channel region;

wherein said semiconductor layer is doped with carbon in at least one boundary region in the vicinity of at least one of said source-channel boundary and said drain-channel boundary at a concentration of at least 1×10^{19} atoms/cm^3.